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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/811,153

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7590

06/12/2008

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EXAMINER

FERGUSON, LAWRENCE D

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

06/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/811,153	<b>Applicant(s)</b> LU ET AL.	
	<b>Examiner</b> LAWRENCE D. FERGUSON	<b>Art Unit</b> 1794	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 17-20, 22-26, 30-36, 41-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15, 17-20, 22-26, 30-36, 41-46 and 50-53 is/are allowed.
- 6) ☒ Claim(s) 1-14 and 47-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to the amendment mailed February 26, 2008. Claims 1, 9, 10, 12, 14, 15 and 47 were amended and claims 37-40 were cancelled rendering claims 1-15, 17-20, 22-26, 30-36 and 41-53 pending.

Upon further consideration, the indicated allowability of claims 1-14 is withdrawn.

### ***New Matter - 35 U.S.C. 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-14 and 47-49 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 10, the phrase, 'first layer consisting of fullerenes' is not supported by the specification. At best the abstract, paragraph 0014 and

Art Unit: 1794

paragraph 0017 disclose a fullerene layer; however, this does not equate to a layer consisting of fullerenes and only fullerenes.

In claims 9 and 14, the phrase, “first layer consisting of one of a mixture of fullerenes and inorganic materials and polymeric fullerenes” is not supported by the specification. Although there is support for a first layer comprising a mixture of fullerenes and inorganic materials and polymeric fullerenes, there does not appear to be support for a layer consisting of one of a mixture of fullerenes and inorganic materials and polymeric fullerenes and only one of a mixture of fullerenes and inorganic materials and polymeric fullerenes.

### ***Claim Rejections – 35 USC 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9-14 and 47-49 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 9, the phrase, “fluoride compound located on said first surface of said first layer consisting of fullerenes” is indefinite. The first layer consists of one of a mixture of fullerenes and inorganic materials and polymeric fullerenes, which is interpreted as consisting of either a mixture of fullerenes, a mixture of inorganic materials or a mixture of polymeric fullerenes, which means the first layer does not consist of any fullerenes. If the first layer does not consist of fullerenes, the second layer cannot be located on a first surface of a first layer consisting of fullerenes.

Art Unit: 1794

In claims 9 and 14, the phrase, “a layered structure including a fullerene layer” is indefinite. It is unclear how the layered structure includes a fullerene layer, where neither the first, second or third layer is claimed as having a fullerene layer. More specifically, the first layer consists of one of a mixture of fullerenes and inorganic materials and polymeric fullerenes, which is interpreted as consisting of either a mixture of fullerenes, a mixture of inorganic materials or a mixture of polymeric fullerenes, which means the first layer does not consist of any fullerenes.

In claims 10 and 14, the phrase, “low work function material” is indefinite. It is unclear how the work function can be low, when it is not being compared to any other material. It is also unclear what the function of the low work material is, in regards to the layered structure.

### ***Claim Rejections – 35 USC 102(e)***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 9 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Czerw et al. (U.S. 6,833,201).

Czerw discloses a layered structure including a fullerene layer (C<sub>60</sub>) bonded with a polymeric material, a lithium fluoride (LiF) layer, having a thickness of 0.5nm and aluminum layer (column 7, lines 14-33) where the

Art Unit: 1794

fullerenes are distributed through the various layers of a device (column 2, lines 20-27). The LiF in combination with the Aluminum combines to give a low work function material, as defined in paragraph 0059 of the instant specification. This is interpreted as the second layer of Czerw comprising a low work function material, which is located on the first surface of the first layer. The reference additionally discloses various materials may be used for the various layers, for example, a layer may include LiF and aluminum (column 6, lines 49-50 and 59-60).

Paragraph 0044 of the instant specification teaches a pre-selected thickness of a lithium fluoride layer is in a range from 0.2nm to about 5nm, which gives Ohmic behavior to the layered structure. Because Czerw discloses the LiF layer has a thickness of 0.5nm and is in contact with a first layer having a mixture of fullerenes and polymer and a third layer having an electrically conductive material (Al), it is inherent for the layered structure to exhibit Ohmic behavior across the first, second and third layers, as in claims 9 and 14.

8. Claims 15, 17-20, 22-26, 30-36, 41-46 and 50-53 are allowed. The closest prior art does not teach or suggest the recited light emitting device further including where the organic molecules of the first interfacial layer are selected from the group consisting of 4,4'-bis(carbazol-9-yl)-biphenyl....1,3,5-Tris[5-(4-(1-dimethylethyl)phenyl-1,3,4-oxadiazol-2-yl)]benzene. As allowable subject matter has been indicated, applicant's reply must either comply with all formal

Art Unit: 1794

requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

### ***Response to Arguments***

9. The rejection of claims 1-14 and 37 made under 35 U.S.C. 112, second paragraph, is withdrawn due to Applicant addressing the objections made in the 112, second rejection.

The objection of claims 6 and 12 is withdrawn due to Applicant deleting one of the two Ni materials within the cited claims.

The rejection made under 35 U.S.C. 103(a) as being unpatentable over Czerw et al. (U.S. 6,833,201) in view of Celii et al (U.S. 6,274,979) is withdrawn due to Applicant amending independent claim 15 to include the indicated allowable subject matter of cancelled claim 40.

The rejection made under 35 U.S.C. 103(a) as being unpatentable over Czerw et al. (U.S. 6,833,201) in view of Celii et al (U.S. 6,274,979) further in view of Hung et al (U.S. 6,069,442) is withdrawn due to Applicant amending independent claim 15 to include the indicated allowable subject matter of cancelled claim 40, which this rejection relied upon.

Art Unit: 1794

***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks, can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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